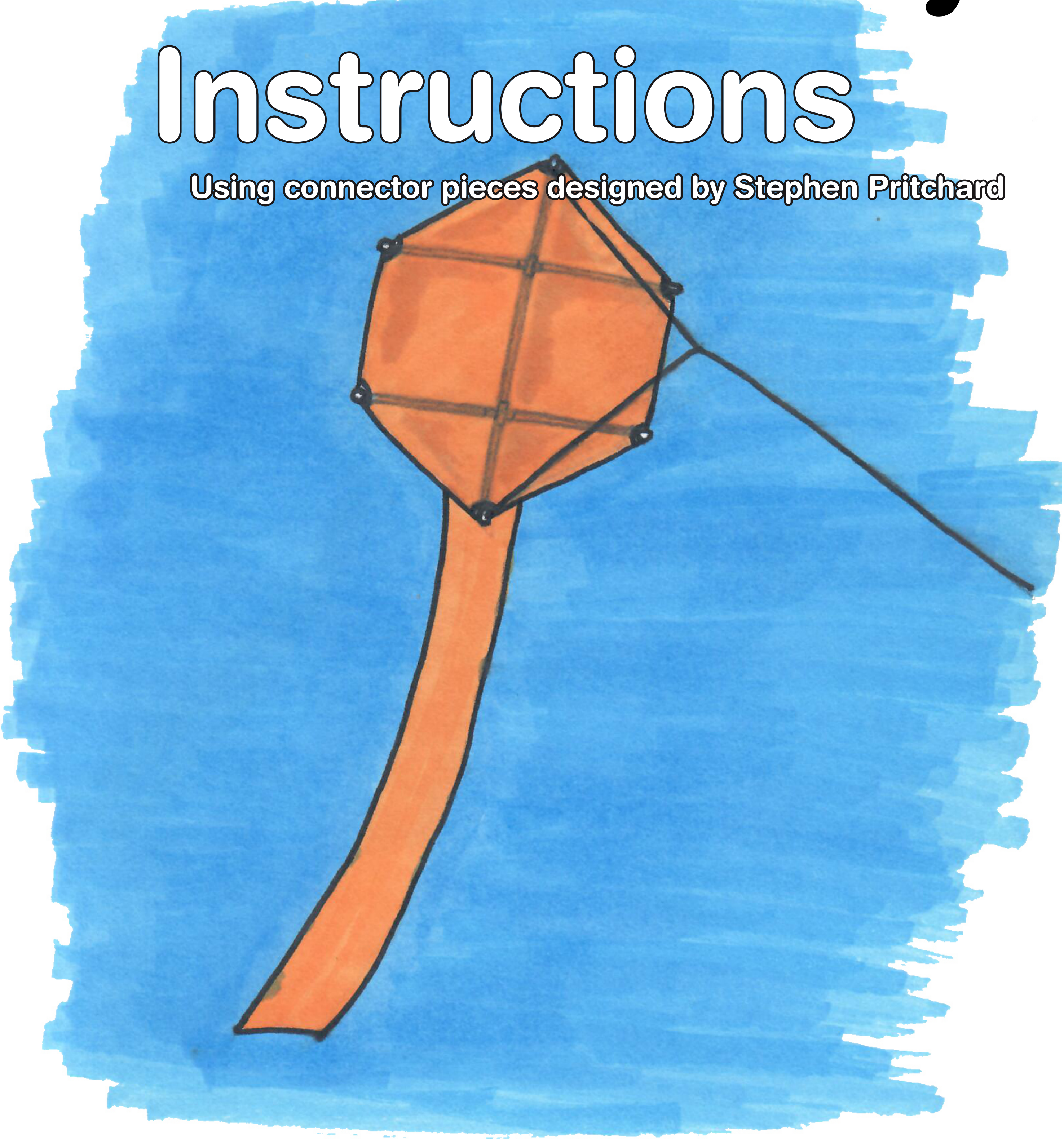
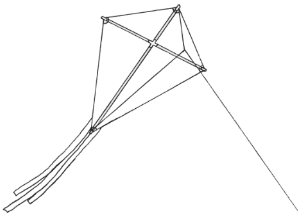
FSpace Publications presents

Kite Assembly Instructions

Using connector pieces designed by Stephen Pritchard





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Publisher	FSpace Publications
Edition	v 1.0.1, February 2022

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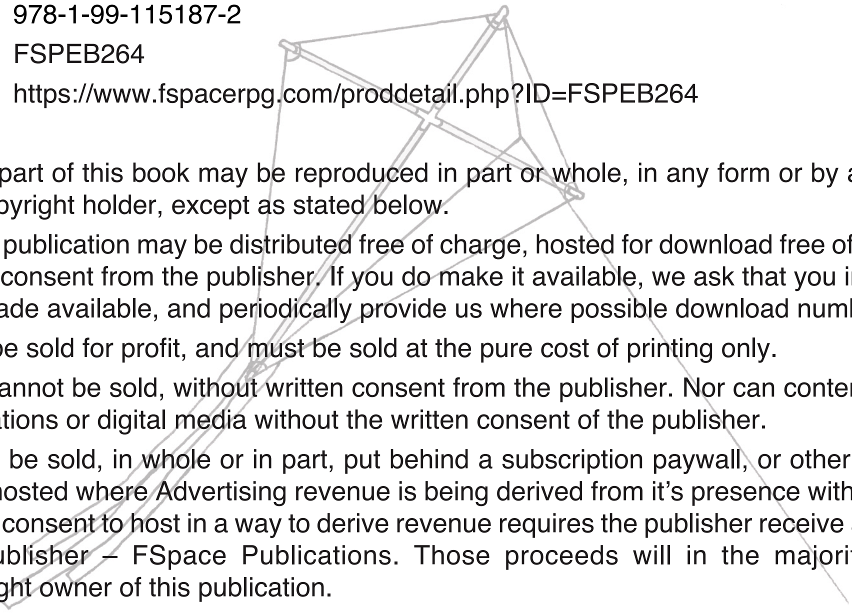

ISBN (PDF v1.0.1):	978-1-99-115187-2
SKU:	FSPEB264
Web:	https://www.fspacerpg.com/proddetail.php?ID=FSPEB264

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FSpace Publications presents Kite Assembly Instructions is published by

FSpace Publications
30 Gardiner Grove
Wainuiomata
Lower Hutt 5014
New Zealand

NZBN: 9429043868957

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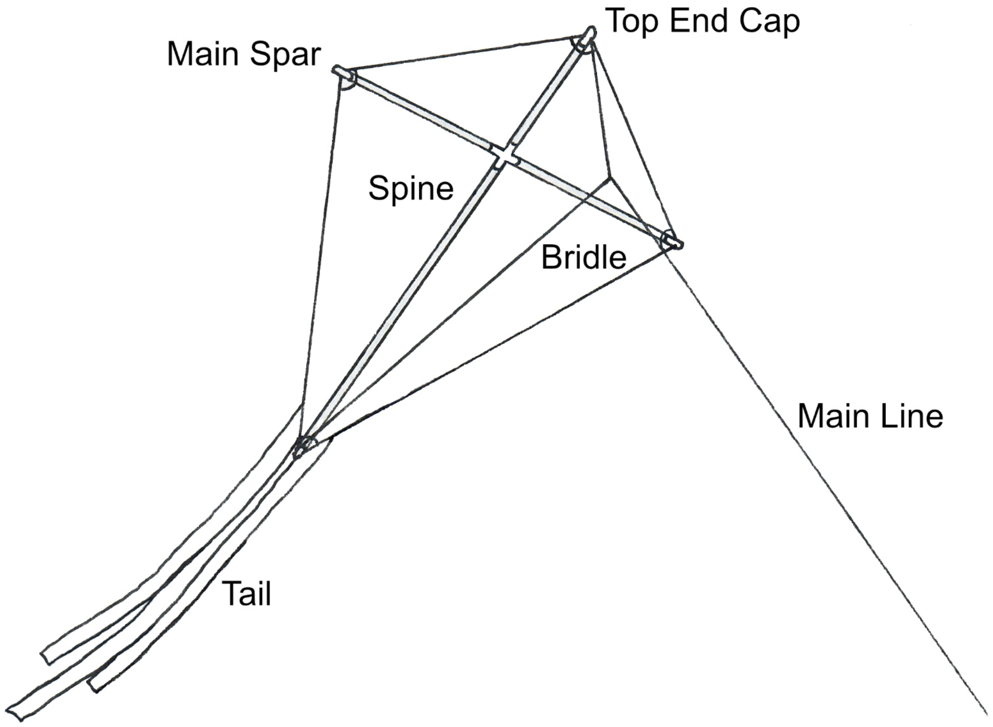
About this kit

The kite kits in our collection come in two different sizes one for metric, which fits 8mm wooden dowels and one for imperial, which fits 3/8” wooden dowels. The kits provide all the end caps and connectors you need to construction the frame for a type of kite. The type of kite that is best for you will depend partly on your skill level at flying them and the types of winds you experience in your area.

Some of our kits include multiple types of connectors to allow you to try building different variations of our kites. You can also buy the connectors separately if you want to create your own design.

Experiment and see what works best for you.

Kite Basics



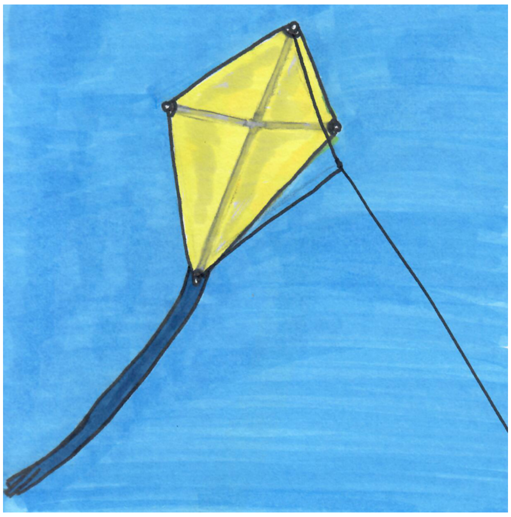
This diagram shows the basic components of a kite.

- Frame: Consists of a spine and cross spar. In our kits the frame is built with our end caps and connectors fitted onto wooden dowels. The frame should be strong enough to survive an impact but light end to allow the kite to fly.
- Bridle and line: The Bridle connects to the top of the spine and to the bottom of the spine. The main line then is attached onto the bridle. On some kites the bridle may attached to multiple points on the frame to allow better control of the kite in flight.
- Kite Covering: A plastic or paper covering is stretched over the frame.
- Tail: The tail attaches to the bottom of the kite and provides drag or extra weight to keep the top of the kite aligned correctly. There are many different styles of tails.

Available Kite Kits

The kits in this series can be used to build the following types of kites.

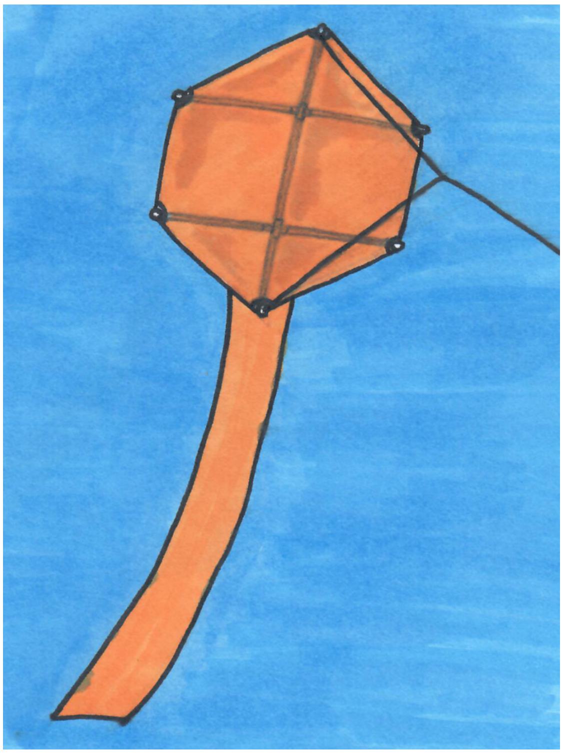
Diamond Kite



These kites are easy to make for a beginner. The kites have a very basic frame in the shape of a cross. The cross spar can be flat or have a dihedral.

Our kit allow you to build a kite with a flat cross spar or a dihedral cross spar. Flat cross spars are good for light winds. Dihedral cross spars are better in strong winds.

Flat Kite

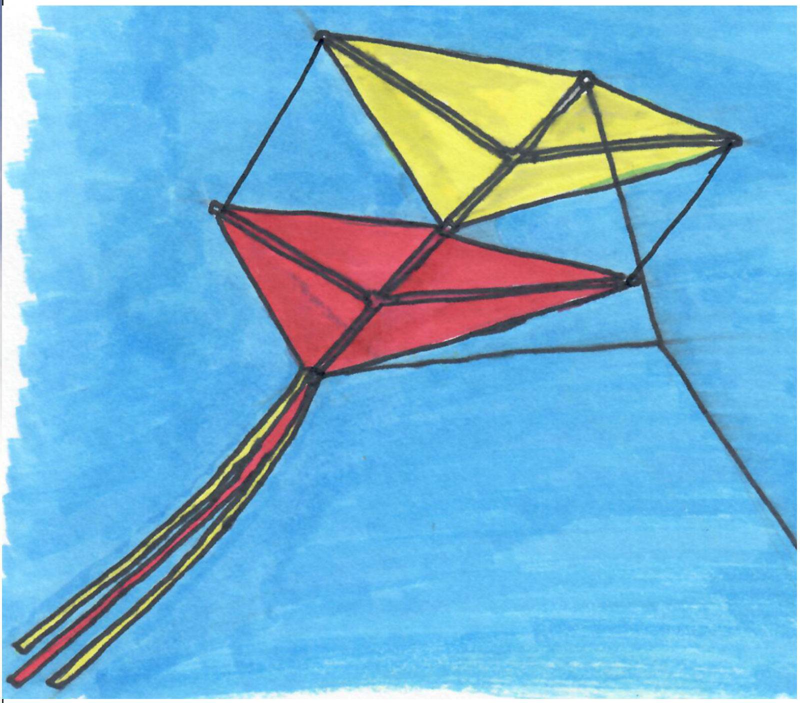


These kites have two cross spars and are a bit more difficult to put together and fly. They also have a longer or heavier tail in order to keep the kite aligned correctly.

They are good for light winds and the large flat area of the kite is ideal for drawing or painting on your own design.

The Japanese Rokkakus kits or fighting kites are very similar to this style of kite but they feature bowed main spars and a 4 or 6 point bridle for greater control of the kite.

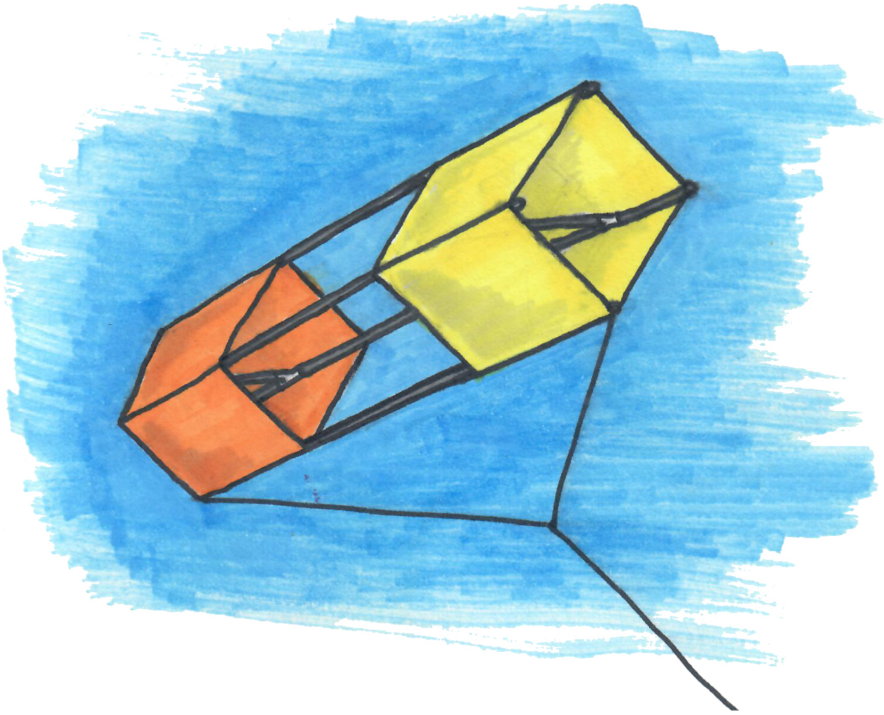
Dual Wing Kite



This is an experimental design which has two main spares and two different coverings to form two separate wings. The main spares both use dihedral connectors.

A 4 or 6 point bridle may be required to keep this kite under control.

Box Kite



These kites have a complex frame and are heavier then the other kites. The extra weight of the frame means they are require stronger winds to get aloft and are not suitable for flying in light winds.

Typically a box kite does not require a tail. The two sail structures form a tube which keeps the kite aligned correctly.

Some Box kites have wings on the side to provide extra stability and lift.

Basic Kite Assembly

This section provides an overview of the stages involved in putting together your kite. There is a more detailed description for each of the specific types of kites in the next section. Please read both before assembling the kite.

Stage 1: Planning

As well as the connectors in this kit you will need some dowel rods and some material to cover the kite in.

Examples of the type of material that can be used for coverings include plastic coverings like disposable table cloths or plastic drop sheets for painting. Alternatively large sheets of brown or white paper can be used. Using paper also allows you to draw or paint on it to create your own unique looking kite.

You will need string or twine for the framing and the bridle. For the main line you will also need a very longer roll of string, preferably on attached to something like a piece of bowel to allow it to be easily rolled up.

To stick the covering together you will need double sided sticky tape or wide single sided tape. You will also need sharp scissors to cut out the covering.

Stage 2: Assembling the frame

Decide on the size of the kite you want to build and cut the lengths of dowel you require. Test fit the connectors, if they don’t fit try running the flat end of a screw driver over the dowel, this will compress the surface of the dowel. If it still doesn’t fit try sanding the dowel, don’t over sand the dowel, it should be a tight fit.

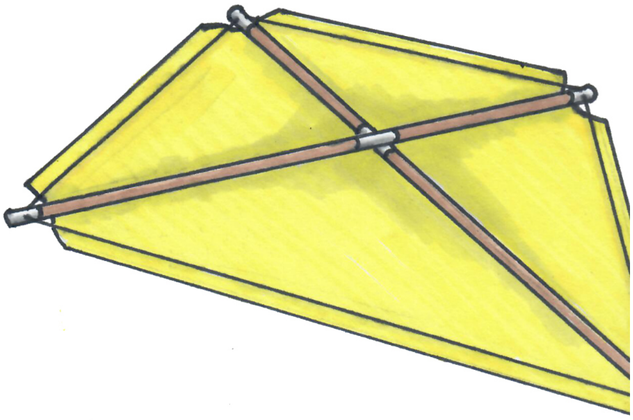
The next section contains a guide on the placement of the connectors for the different kite kits. Read the section relevant to the kit you have.

Stage 3: Run string around the frame

Run string through the holes in the end caps, wrap it around the top end cap and knot the ends together. Make sure the string is tight before knotting it together. The string is to partly to hold the shape of the kite and partly to provide something to attach the covering of the kite to,

Stage 4: Marking up and cutting out covering

Once the the frame has been assembled lay the covering material you are going to use on a large flat surface.



Place the frame face down on the covering and use a marker pen to mark the position of the spares and the spine. This is to allow you to easily relocate the kite on the covering if it is knock out of position in the next steps.

Carefully mark out a pattern around the kite. Leave a flap about 30 to 40cm from the string to the edge of the covering. These flaps will then be folded over the string and taped into place in the next stage. Also Leave a cutout around the top and bottom end caps to allow room for the bridle to be connected to them.

Once you are happy cut out the covering using a sharp pair of scissors. Test fit it before moving onto the next stage.

Stage 5: Taping the covering into place

Place the covering on to a flat surface and place the kite face down on it. Make sure the covering is lined up with where it will go on the kite. Attach either double sided sticky tape onto the backside of flap you left in the previous section or normal tape the front of the flap of one section of the covering. Carefully fold the flap over the string and tape it together.

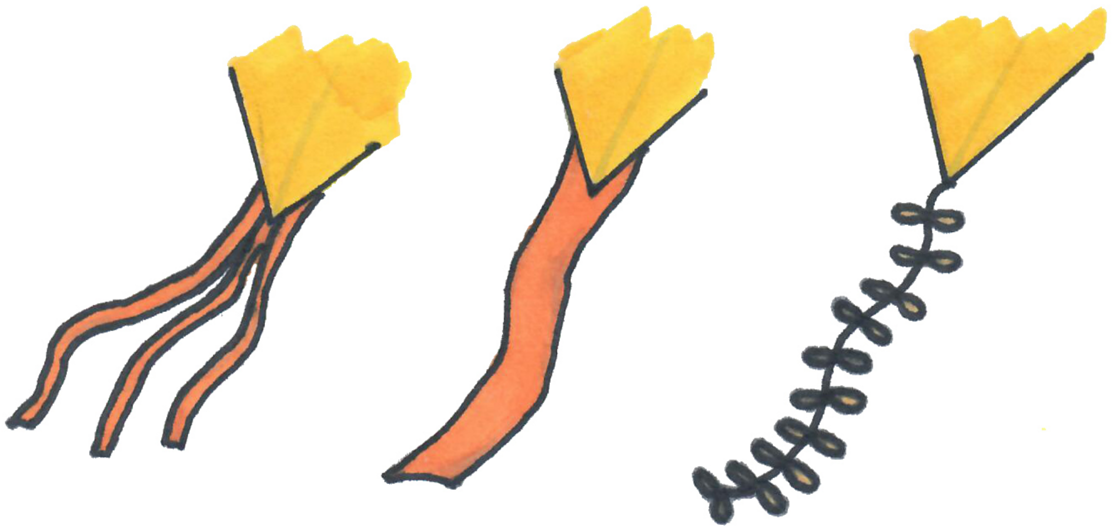
Attach tape to the flap on the opposite side of the kite, pull the covering tight and fold the flap over and tape it together.

Work your way around the kite taping the covering together. Always work on opposite sides so the covering can be pulled tight. The covering should be tight but doesn't need to be super tight.

On complex kites you can use cloths pegs to temporarily hold the covering together until you can taped it together. This will also help you to align the covering correctly on the frame.

Stage 7: Adding a tail

There are many different styles of kite tails and tails can be made from many different materials. The main function of the tail is to keep the nose of the kite pointing upwards. They do this by providing aerodynamic drag or by providing extra weight.



In generally a tail should be roughly 5 times the length of the kite. Which style of tail you choose depends on what type of winds the kite will be flying in and what type of kite you have.

Popular style include:

- *Three thin strips*: This style is good for light winds and looks nice. In strong or gusty winds the tails can get twisted together.
- *A single wide tail*: Using a single long tail is better for medium to strong winds. A wide tail provides more drag and isn't as easily twisted.
- *Ice cream sticks*: A series of ice cream sticks are knotted onto a length of string. This is an example of using the weight of the sticks to pull the tail downwards. It is not suitable to use in light winds because the extra weigh may make the kite more difficult to launch.

Attach the tail with double sided tape or single side tape to the bottom of the kite. Make sure it is attached securely particularly if you are using a weighted tail.

When you launch the kite for the first time, if it keeps spinning around, it is an indication you do not have enough drag or weight in the kites tail. Try lengthening the tail be taping more material to it or by adding more ice cream sticks. Generally the longer the tail the better for control but the more difficult it is to launch.

You can also purchase pre-made tails from the likes of eBay or Amazon that can be attached to the bottom of of your kite.

Stage 6: Adding the bridle line and main line

The Bridle is usually twice the length of the kite and is attached to the top and bottom of the kite. Some more complex kites like the flat kite or the box kite may require the bridle to be attached to the main spars as well to allow for better control of the kite,

The main line is connected near the top of the bridle line roughly in line with the main cross spar. Changing were the main line connects to the kite alters the angle of attack of the kite. Experiment with a few different positions until you find one the works well for your kite.

Wrapping the main line around a piece of thick dowel allows it to be rolled up easily when not used. If you are using a nylon string for the main line make sure it is secured tightly. Knots in nylon string can come undone easily.

Diamond Kite Frame Construction

The frame of this kite has a single main spine and a single main spar.

These instructions mention the Type “C” but you can use any of the other mid section connector types supplied with this kit.

The Type “C” is the simplest to use because it doesn’t require the main spar to be cut into two. The type “K”, “G”, “F” and “E” all have different degrees of dihedral and require the main spar to be cut in two.

The Type “C” connector is good for light winds, for medium or strong winds try one of the other connectors with a dihedral like the Type “K”.

Construction details:

1. Attach a Type “B” end cap to the bottom of the spine. Make sure the bridle connector is facing forwards.
2. Push the Type “C” connector part way down the spine. This is for the main spar, it should be position towards the top of the kite. The section of the Type “C” connector were the spine pass through is the front and should face forwards, the section were the spar passes through is the back.
3. Attach a Type “B” end caps to the top of the spine. Make sure the bridle connector is facing forwards.
4. Push the spar into the Type “C” connector. Measure to make sure that each side is of equal length.

5. Add the Type “A” end caps to the spar.The holes should point up and down along the length of the kite.

6. Optional if you are using the Type “C” connectors, run string from the end cap on one side of the main spar to the end cap on other side and tighten until a curve forms in the main spar. This is a tensing line and helps form a bow in the spar.

7. Run string through all the end caps and knot it at the top.

Flat Kite Frame Construction

The frame of this kite has a single main spine and two spars of equal length.

Construction details:

1. Attach a Type “B” end cap to the bottom of the spine. Make sure the bridle connector is facing forwards.

2. Push the two Type “C” connectors down the spine. This is for the lower and upper spar. The section of the connector were the spine pass through is the front and should face forwards, the section were the spare passes through is the back.

3. Leave a good distance between the to connectors. These kites tend to be longer in the middle and not symmetrical.

4. Attach a Type “B” end cap to the top of the spine. Make sure the bridle connector is facing forwards,

5. Push the top and bottom spars into the Type “C” connectors. Measure to make sure that each side is of equal length.

6. Add the Type “A” end caps to the spars. The holes should point up and down along the length of the kite.

7. Optional run string from the end caps on one side of the spars to the end caps on the other side and tighten it. This is a tensing line and helps form a bow in the spars. Make sure both spars have the same bow.

8. Run string through all the end caps and knot it at the top.

These kites sometimes have more complex bridles to help control them. Additional bridles lines go from the end caps on the spars to the bridle line attached to the top and bottom end caps.

Dual Winged Kite Frame Construction

The frame of this kite has a single main spine and two spars of equal length.

Construction details:

1. Attach a Type “B” end cap to the bottom of the spine. Make sure the bridle connector is facing forwards.

2. Push a Type “K” connector down the spine. This is for the lower spar. The section of the connector were the spine pass through is the front and should face forwards, the section were the spare passes through is the back.

3. Push a Type “J” connector down the spine. Position it roughly in the middle of the spine. The connector should be flat with the loops on the side. The loops will be used for running the string through to support the covering.

4. Push a Type “K” connector down the spine. This is for the upper spar. The section of the connector were the spine pass through is the front and should face forwards, the section were the spare passes through is the back.

5. Attach a Type “B” end cap to the top of the spine. Make sure the bridle connector is facing forwards.

6. Push the spars into the top and bottom Type “C” connectors. Measure to make sure that each side is of equal length.

7. Add the Type "A" end caps to the spars. The holes should point up and down along the length of the kite.

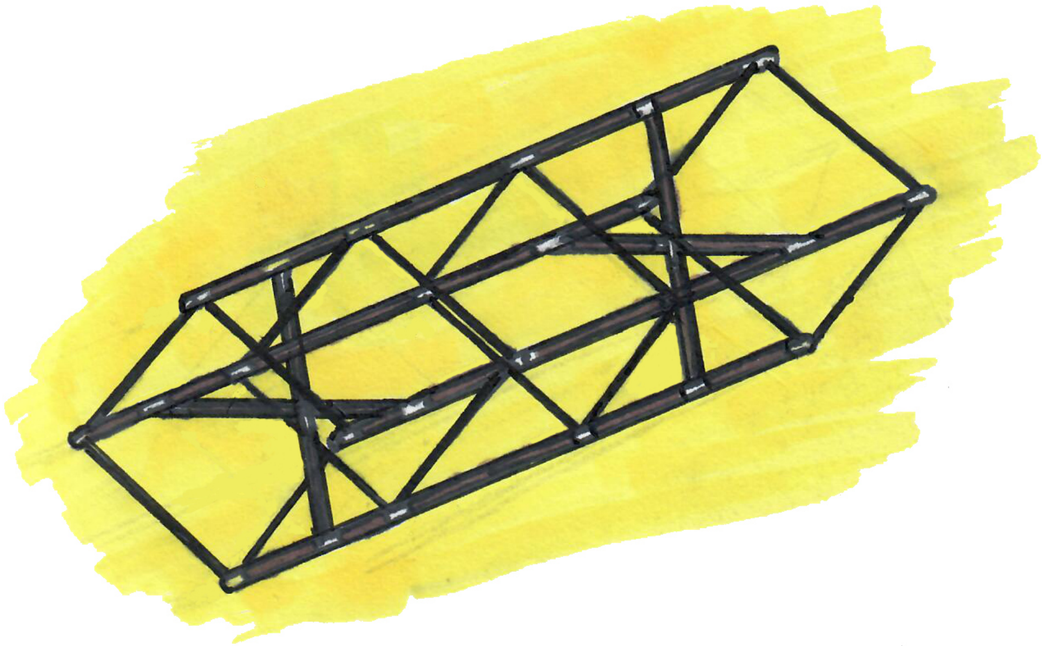
8. Optional if you are using the Type "C" connectors, run string from the end caps on one side of the spar to the end cap on the other side and tighten it. This is a tensing line and helps form a bow in the spars.

9. Run string through all the top end cap, the end caps on the top spar and the Type "J" connector and knot it at the top. This will form the top wing.

10. Run string through all the bottom end cap, the end caps on the bottom spar and the Type "J" connector and knot it at the top. This will form the bottom wing.

Box Kite Frame Construction

The frame on a box kite is complex. This Diagram shows what the frame for a box kite looks like.



The are 4 main spines of equal length running the full length of the frame.
The main spines are held together by 2 set of cross shaped spars in the middle of the kite.

The top and side main spines have the following arrangement of connector on them

- Type “A” end cap
- Type “H” Connector
- Type “L” Connector
- Type “L” Connector
- Type “H” Connector
- Type “A” end cap

The bottom main spine has the following arrangement of connectors:

- Type “B” end cap
- Type “H” Connector
- Type “L” Connector
- Type “L” Connector
- Type “H” Connector
- Type “B” end cap

Construction details:

1. For the top and side main spine; Put a Type “A” end cap on one end and then push other required connectors onto it in the order shown above.

2. Put a Type “A” end cap on the other end.

3. For the bottom spine. Do the same thing but use Type “B” end caps. Make sure the bridle connectors are both facing outwards.

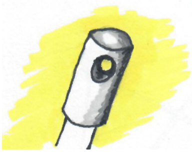
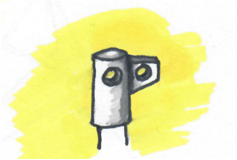
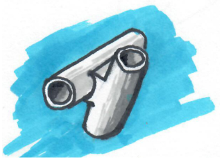
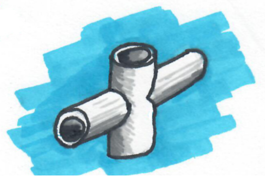
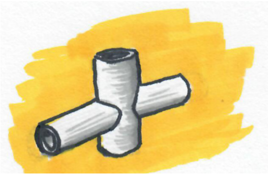
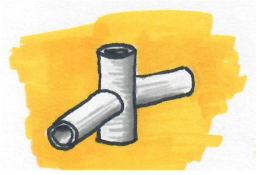
4. Push the spars into both the Type “C” connectors. Measure to make sure the sides are of equal length.

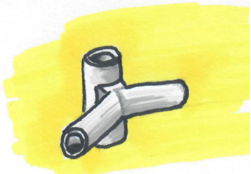
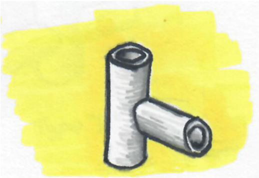
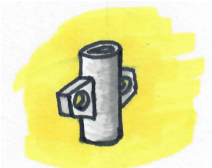
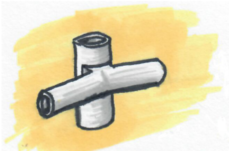
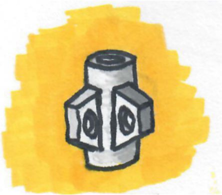
5. Connect the spars to the “H” connectors on the main spines.

6. Run string through all the end caps on the top of the the kite and knot it together.
7. Run string through all the end caps on the bottom of the the kite and knot it together.
8. Run string through the Type “J” connectors in the middle top of the frame and knot it together.
9. Run string through the Type “J” connectors in the middle bottom of the frame and knot it together.

Connector types

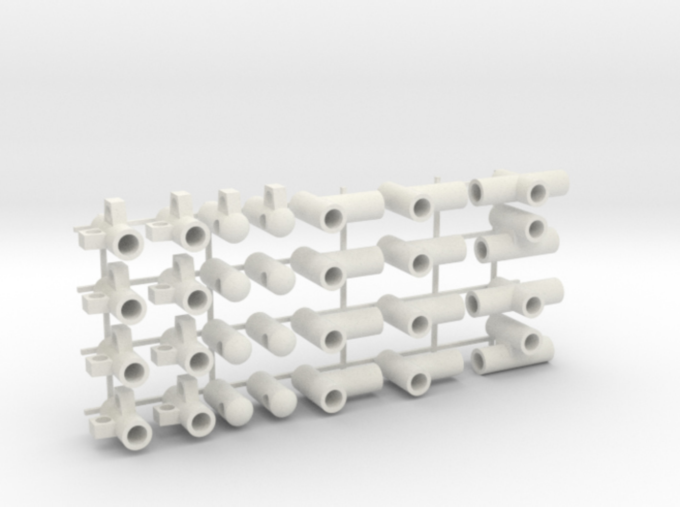
This table shows available connectors

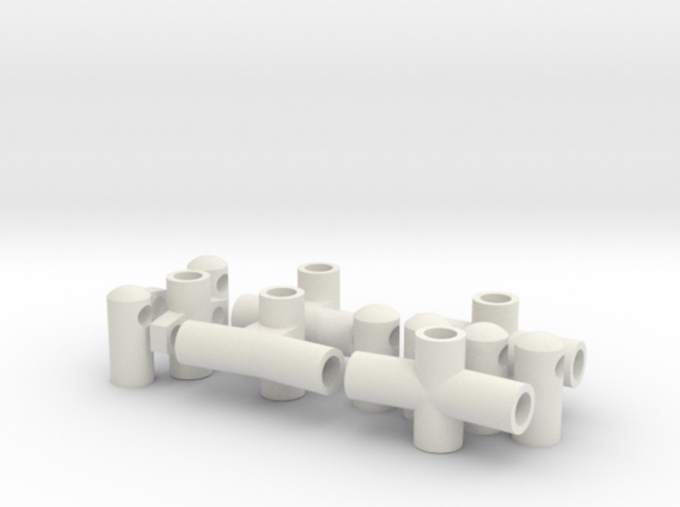
	**Type “A” end cap**
	**Type “B” end cap**
	**Type “C” connector**
	**Type “D” connector**
	**Type “E” connector**
	**Type “F” connector**

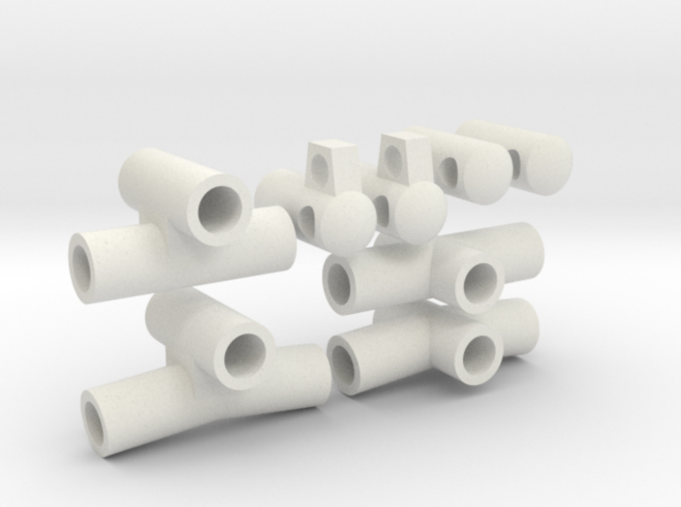
	**Type “G” connector**
	**Type “H” connector**
	**Type “J” connector**
	**Type “k” connector**
	**Type “L” connector**

Kite connector parts can be ordered from Shapeways

https://www.shapeways.com/shops/fspacerpg?section=Outdoor+hobbies&s=0







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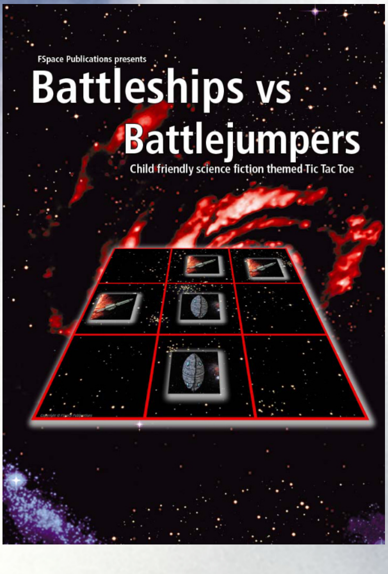
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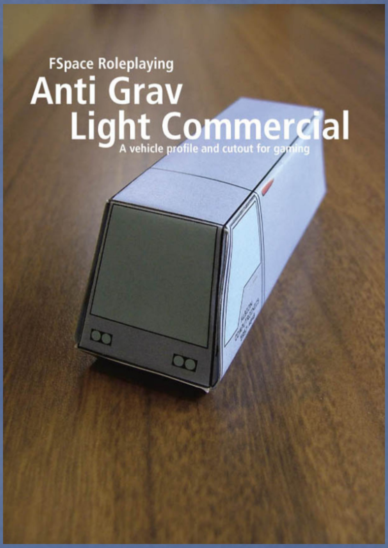
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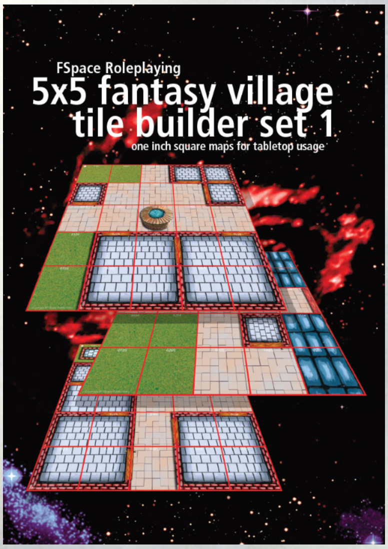
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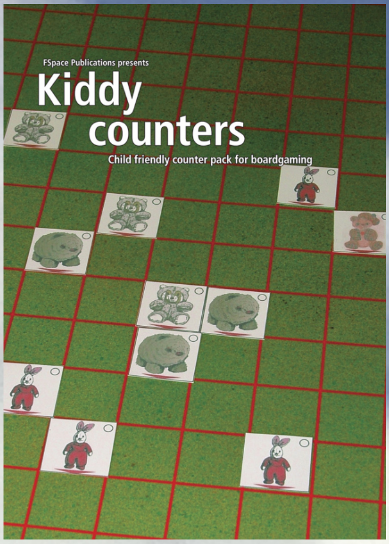
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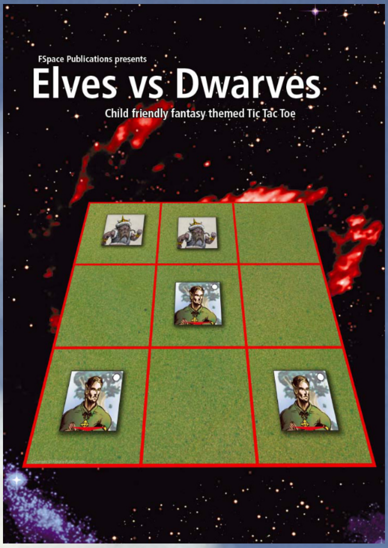
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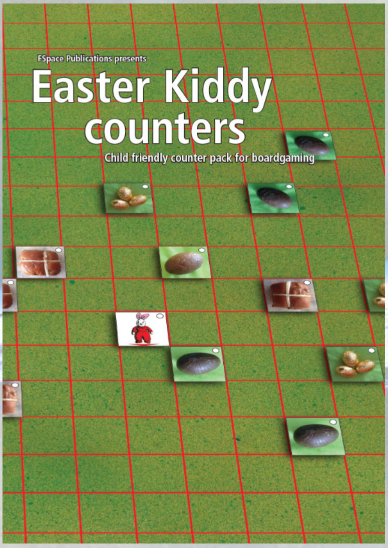
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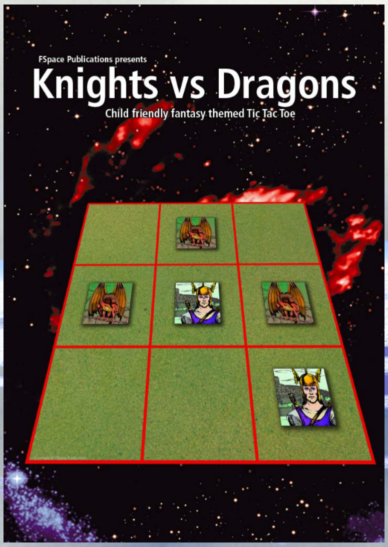
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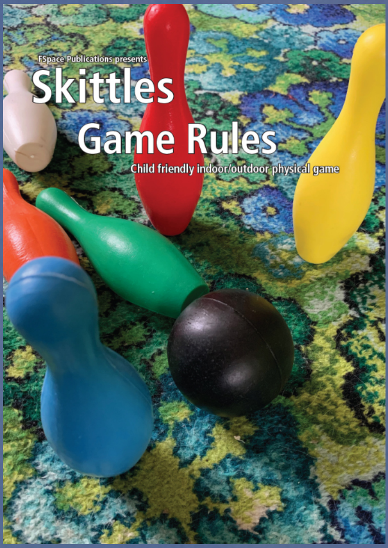
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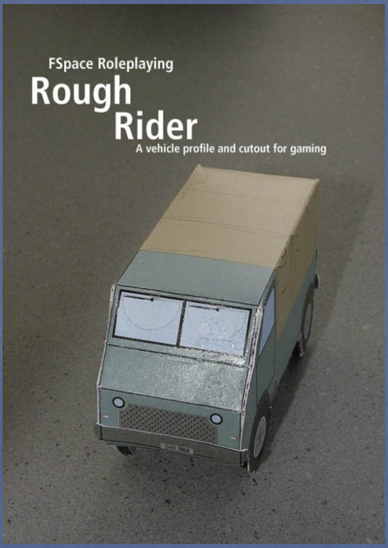

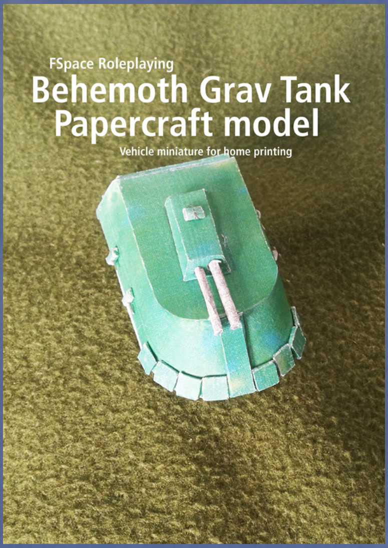

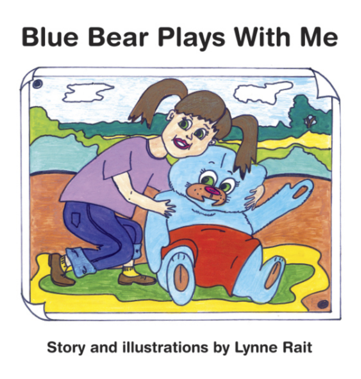

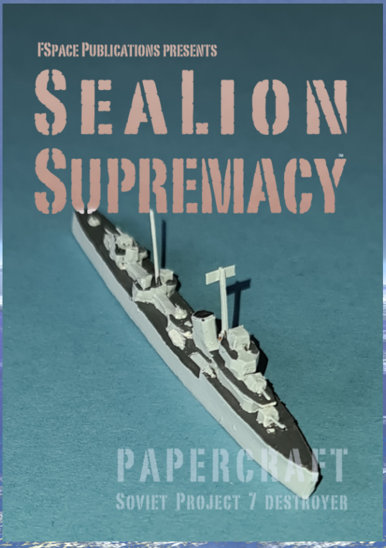

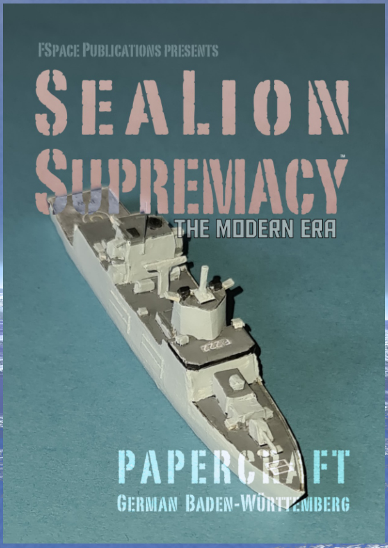

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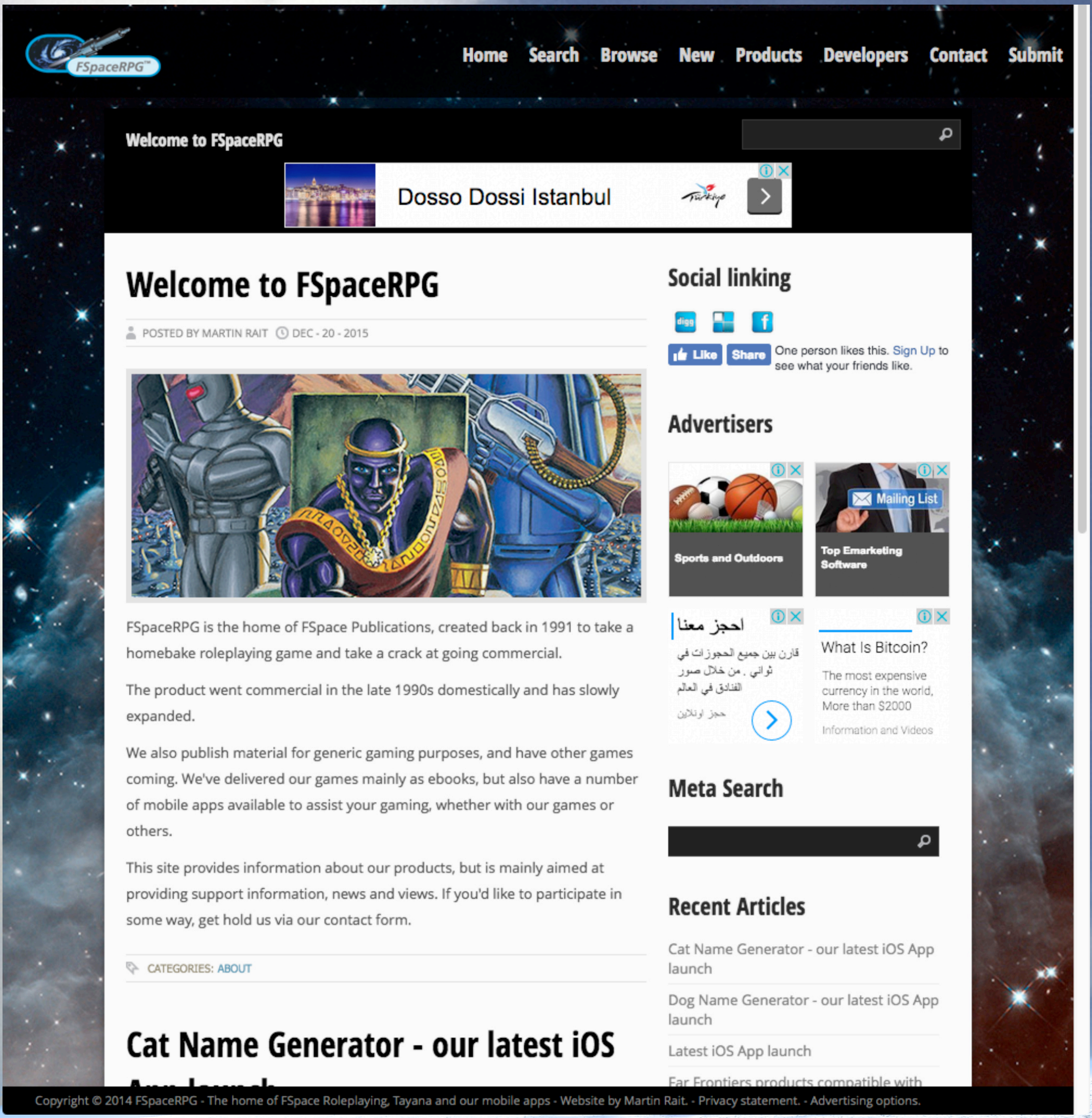

Welcome to FSpaceRPG

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Welcome to FSpaceRPG

POSTED BY MARTIN RAIT DEC - 20 - 2015

FSpaceRPG is the home of FSpace Publications, created back in 1991 to take a homebake roleplaying game and take a crack at going commercial.

The product went commercial in the late 1990s domestically and has slowly expanded.

We also publish material for generic gaming purposes, and have other games coming. We've delivered our games mainly as ebooks, but also have a number of mobile apps available to assist your gaming, whether with our games or others.

This site provides information about our products, but is mainly aimed at providing support information, news and views. If you'd like to participate in some way, get hold us via our contact form.

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